What is claimed is:

1.   A method for determining components of a signaling pathway, the method comprising:

exposing a set of recombinant cells to at least one factor that activates or inhibits said signaling pathway, wherein each member of said set of recombinant cells either over or under-expresses a gene to be determined as a component in said pathway;

recording changes in. at least two different cellular parameter readouts after exposure to said at least one factor;

deriving a functional profile from changes in said parameter readouts for each said gene to be determined as a component in said pathway;

and clustering genes in pathways according to similarities in functional profile.

2.   A method for determining the presence of an interaction between a first and a second signaling pathway, the method comprising:

exposing a set of recombinant cells to at least one factor that activates or inhibits at least one said signaling pathway, wherein each member of said set of recombinant cells either over or under-expresses a gene that is a component in at least one said signaling pathway;

recording changes in at least two different cellular parameter readouts after exposure to said at least one factor;

deriving a functional profile from changes in said parameter readouts for each said gene;

determining if said over or under-expressed gene in one of said pathways responds to said activators in a manner that correlates to the responses measured for one of said over or under-expressed genes in the other of said pathways, wherein if such a correlation exists then said first and said second signaling pathways interact, and the common component of said interaction is the gene for which said correlation was observed.

3.   A method for ordering the components of a signaling pathway, the method comprising:

exposing a first set of recombinant cells to a first inhibitor of said signaling pathway, wherein each member of said set of recombinant cells either over or under-expresses a gene that is a component in said signaling pathway, wherein said signaling pathway is activated;

exposing a second set of said recombinant cells to a second inhibitor of said signaling pathway, wherein each member of said set of recombinant cells either over or under-expresses a gene that is a component in said signaling pathway;

recording changes in at least two different cellular parameter readouts after exposure to said at said first and said second inhibitors;

determining the epistatic relationships between said components and said inhibitors of said pathway; and correlating the relative order of action of said inhibitors with the order of the components of the pathway.

4.   A method for determining the mechanism of action for a test compound on a signaling pathway, the method comprising:

exposing a set of recombinant cells, each member of which over or under-expresses a target gene, to a test compound;

recording changes in at least two different cellular parameter readouts after exposure to said at least one factor;

deriving a functional profile from changes in said parameter readouts for each said gene; and

comparing said functional profile with functional profiles of a set of control compounds having known mechanisms of action; and

determining if said test compound produces a functional profile comparable to one or more of said control compounds.

5.   The method according to Claim 4, wherein said exposing is performed in the presence of at least one factor that activates or inhibits at least one signaling pathway.

6.   The method according to Claim 4, wherein said set of recombinant cells under-expresses a target gene as a result of exposure to an agent that specifically inhibits expression of said target gene.

7.   The method according to any one of Claims 1-6, wherein said exposing step comprises exposing said set of cells to at least two different factors.

8.   The method according to any one of Claims 1-6, wherein said exposing step comprises exposing said set of cells to at least three different factors.

9.   The method according to any one of Claims 1-6, wherein changes in at least four parameters and not more than ten parameters are recorded.

10.   The method according to any one of Claims 1-6, wherein functional profiles are ordered in a correlation plot by multidimensional scaling.